WHAT IS CLAIMED IS:

1. A liquid drop discharger comprising:

a coil for generating a magnetic field based on an electric current that is applied;

a moving section, removably disposed with respect to the coil so as to be movable in a central axial direction of the coil, for generating an induced current around the moving section by the magnetic field generated by the coil;

means for vertically applying a magnetic field to a peripheral surface of a peripheral member of the moving section; and

a discharge opening, which moves together with the moving section, for discharging a liquid by changing the volume of a liquid chamber containing the liquid as a result of the movement of the moving section.

2. A liquid drop discharger according to Claim 1, wherein the coil has two concentric coiled portions of different winding diameters, the winding directions of the coiled portions being the same.

3. A liquid drop discharger according to Claim 1, wherein the moving section is removably disposed with respect to a flow path defining a portion of the liquid

chamber containing the liquid.

4. A liquid drop discharger according to Claim 1, wherein the flow path, which defines a portion of the liquid chamber, is removable from the coil and the magnetic field applying means.

5. A liquid drop discharger according to Claim 1, wherein the moving section comprises a guide for allowing the movement of the moving section with respect to the flow path defining a portion of the liquid chamber containing the liquid.

6. A liquid drop discharger according to Claim 1, wherein the moving section discharges the liquid by reciprocating between a predetermined reference position and a contraction position situated in a direction in which the volume of the liquid chamber is reduced from the reference position.

7. A liquid drop discharger according to Claim 1, wherein the moving section discharges the liquid by reciprocating between a predetermined reference position and an expansion position situated in a direction in which the volume of the liquid chamber is increased from the reference

position.

8. A liquid drop discharger according to Claim 1, wherein the magnetic field applying means is an annular magnetic circuit having a gap in a portion thereof and being disposed so that the magnetic field is applied to the peripheral member with the coil and the peripheral member being disposed in the gap.

9. A liquid drop discharger according to Claim 1, wherein the moving section has a plurality of the discharge openings for discharging liquid drops by the movement of the moving section.

10. A liquid drop discharger according to Claim 1, further comprising a plurality of liquid drop discharge head sections each comprising at least the coil and the moving section.

11. A liquid drop discharger according to Claim 1, comprising a plurality of the liquid chambers, wherein the same liquid or different liquids are supplied to the liquid chambers.

12. A liquid drop discharger according to Claim 1,

wherein the liquid from the discharge opening is any one of ink, a liquid containing a biological substance, a liquid containing an organic electroluminescent material, a liquid containing fine metallic particles, and a liquid dispersedly mixed with carbon nanotube.

13. A method of discharging a liquid drop, comprising the steps of:

applying a magnetic field vertically to a peripheral surface of a peripheral member of a moving section removably disposed with respect to a coil so as to be movable in a central axial direction of the coil;

generating a magnetic field by applying a predetermined electric current to the coil;

generating an induced current around the peripheral member by applying the magnetic field generated by the coil to the peripheral member;

moving the moving section by an electromagnetic force based on the applied magnetic field and the generated induced current; and

discharging a liquid from a discharge opening by changing the volume of a liquid chamber containing the liquid by moving the moving section.

14. A method of discharging a liquid drop according to

Claim 13, wherein the liquid is discharged by moving the moving section so that the volume of the liquid chamber is reduced.

15. A method of discharging a liquid drop according to Claim 13, wherein the liquid is discharged by moving the moving section so that the volume of the liquid chamber is increased.

16. A method of discharging a liquid drop according to Claim 13, wherein the moving section has a plurality of the discharge openings for discharging a plurality of the liquid drops by moving the moving section.

17. A method of discharging a liquid drop according to Claim 13, wherein the same liquid or different liquids are supplied to a plurality of the liquid chambers in order to discharge a plurality of the liquid drops at the same time.

18. A method of discharging a liquid drop according to Claim 13, wherein the liquid to be discharged is any one of ink, a liquid containing a biological substance, a liquid containing an organic electroluminescent material, a liquid containing fine metallic particles, and a liquid dispersedly mixed with carbon nanotube.

19. A test chip processor comprising:

a chip drive section for holding a test chip and moving the test chip under a predetermined condition;

a liquid drop discharge head section for discharging a liquid to be tested dropwise onto predetermined locations of the test chip; and

a sensor for performing testing by irradiating the predetermined locations of the test chip with light,

wherein the liquid drop discharge head section comprises:

a coil for generating a magnetic field based on an electric current that is applied;

a moving section, removably disposed with respect to the coil so as to be movable in a central axial direction of the coil, for generating an induced current around the moving section by the magnetic field generated by the coil;

means for vertically applying a magnetic field to a peripheral surface of a peripheral member of the moving section; and

a discharge opening, which moves together with the moving section, for discharging the liquid by changing the volume of a liquid chamber containing the liquid as a result of the movement of the moving section.

20. A test chip processor according to Claim 19, wherein the test chip is a DNA chip having probe DNAs disposed in a predetermined arrangement, wherein the predetermined locations of the test chip correspond to the locations of the probe DNAs on the DNA chip, and wherein a state of a bonding reaction of a nucleic acid to be tested in the probe DNA is tested.

21. A test chip processor according to Claim 19, wherein the test chip is a test disc, and wherein the chip drive section holds the test disc and rotates the test disc under the desired condition.

22. A method of processing a test chip, comprising the step of:

performing testing by discharging a liquid to be tested dropwise onto a predetermined location of the test chip and irradiating with light the predetermined location,

wherein the dropwise discharge of the liquid comprises the steps of:

applying a magnetic field vertically to a peripheral surface of a peripheral member of a moving section removably disposed with respect to a coil so as to be movable in a central axial direction of the coil;

generating a magnetic field by applying a predetermined

electric current to the coil;

generating an induced current around the peripheral member by applying the magnetic field generated by the coil to the peripheral member;

moving the moving section by an electromagnetic force based on the applied magnetic field and the generated induced current; and

discharging the liquid from a discharge opening by changing the volume of a liquid chamber containing the liquid by moving the moving section.

23. A printer device comprising:

an ink discharge head comprising:

a coil for generating a magnetic field based on an electric current that is applied;

a moving section, removably disposed with respect to the coil so as to be movable in a central axial direction of the coil, for generating an induced current around the moving section by the magnetic field generated by the coil;

means for vertically applying a magnetic field to a peripheral surface of a peripheral member of the moving section; and

a discharge opening, which moves together with the moving section, for discharging ink by changing the volume of a liquid chamber containing the ink as a result of the

movement of the moving section.

24. A printing method comprising the steps of:

applying a magnetic field vertically to a peripheral surface of a peripheral member of a moving section removably disposed with respect to a coil so as to be movable in a central axial direction of the coil;

generating a magnetic field by applying a predetermined electric current to the coil;

generating an induced current around the peripheral member by applying the magnetic field generated by the coil to the peripheral member;

moving the moving section by an electromagnetic force based on the applied magnetic field and the generated induced current; and

discharging ink from a discharge opening by changing the volume of a liquid chamber containing the ink by moving the moving section, so that a desired printing operation is performed.

25. A method of producing an organic electroluminescent panel comprising a light-emitting layer on a substrate, the method comprising the step of:

forming the light-emitting layer by discharging a liquid containing a light-emitting material dropwise onto

and applying the liquid to a predetermined location by a liquid discharge head,

wherein the dropwise discharge of the liquid by the liquid discharge head comprises the steps of:

applying a magnetic field vertically to a peripheral surface of a peripheral member of a moving section removably disposed with respect to a coil so as to be movable in a central axial direction of the coil;

generating a magnetic field by applying a predetermined electric current to the coil;

generating an induced current around the peripheral member by applying the magnetic field generated by the coil to the peripheral member;

moving the moving section by an electromagnetic force based on the applied magnetic field and the generated induced current; and

discharging the liquid from a discharge opening by changing the volume of a liquid chamber containing the liquid by moving the moving section.

26. A method of forming a conductive pattern, comprising the steps of:

applying a magnetic field vertically to a peripheral surface of a peripheral member of a moving section removably disposed with respect to a coil so as to be movable in a

central axial direction of the coil;

generating a magnetic field by applying a predetermined electric current to the coil;

generating an induced current around the peripheral member by applying the magnetic field generated by the coil to the peripheral member;

moving the moving section by an electromagnetic force based on the applied magnetic field and the generated induced current; and

discharging a liquid containing fine conductive particles from a discharge opening by changing the volume of a liquid chamber containing the liquid by moving the moving section, so that a desired conductive pattern is formed on a substrate.

27. A method of producing a field emission display, comprising the step of:

forming a field emission cathode by successively discharging dropwise a liquid dispersedly mixed with a carbon nanotube onto and applying the liquid to a predetermined location by a liquid discharge head,

wherein the dropwise discharge of the liquid by the liquid discharge head comprises the steps of:

applying a magnetic field vertically to a peripheral surface of a peripheral member of a moving section removably

disposed with respect to a coil so as to be movable in a central axial direction of the coil;

generating a magnetic field by applying a predetermined electric current to the coil;

generating an induced current around the peripheral member by applying the magnetic field generated by the coil to the peripheral member;

moving the moving section by an electromagnetic force based on the applied magnetic field and the generated induced current; and

discharging the liquid from a discharge opening by changing the volume of a liquid chamber containing the liquid by moving the moving section.